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Ronald P. Kananen, Esq.  
RADER, FISHMAN & GRAUER  
The Lion Building  
1233 20th Street, N.W., Suite 501  
Washington, DC 20036

EXAMINER
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HERNANDEZ, NELSON D

ART UNIT	PAPER NUMBER
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2622

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/652,150

Applicant(s)

HOSHINO ET AL.

Examiner

Nelson D. Hernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12,13 and 15-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12,13 and 15-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. The Examiner acknowledges the amended claims filed on January 5, 2006.

**Claim 12** has been amended. **Claims 1-11 and 14** have been canceled. **Claims 21-29** have been newly added.

### *Response to Arguments*

2. Applicant's arguments filed January 5, 2006 have been fully considered but they are not persuasive.

The Applicant argues the following:

- a. "the Office Action fails to show why the skilled artisan would have been motivated to modify Matsumoto by replacing the insulating material such as ceramics or the like of the substrate 15 of Matsumoto with the metallic layer associated with element 9c of Murano, especially when the wiring patterns 17 of Matsumoto are on the rear side of the substrate 15. See, for example, In re Dillon, 13 USPQ2d 1337, 1342 (Fed. Cir. 1989), and M.P.E.P. §2143.01, section "The Proposed Modification Cannot Change The Principle Of Operation Of A Reference." And that "the opening 105 of Matsumoto extends through the support plate 102 (Matsumoto at Figure 7)".

➤ The Examiner respectfully disagrees. In the combined teaching of embodiment 2 in view of embodiment 1 in the Matsumoto reference as discussed and analyzed in claim 12, the plate 102 being modified with a through hole as suggested in the first embodiment (as discussed in claim 12 rejection in the

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previous Office Action mailed on October 6, 2006, this also teaches that the combined teaching of embodiment 2 in view of embodiment 1 in Matsumoto would permit one of ordinary skill in the art to have the opening 105 extending through the plate 102; see claim 12 rejection in the previous Office Action mailed on October 6, 2006) would be the plate being replaced by the metallic layer associated with the substrate 9c of Murano. As shown in Matsumoto (Col. 5, lines 57-65), the wiring patterns 107 of the film substrate 103 are mounted facing the light receiving surface 104a (See also figs. 7 and 8) and that the thin film substrate is used to protect the image pickup device 104 area of the image pickup device but the rectangular opening 105 (Col. 5, lines 37-56). Since the wiring is formed on the substrate on the opposite side of the one having the plate 102, one of ordinary skill in the art at the time the invention was made would not need to reconstruct or redesign the elements in the Matsumoto reference to replace material of the plate 102 to a metal material because the image pickup device 104 and the wiring 103 would be protected by the thin film on the substrate 103 (Matsumoto) against any noise or short circuit between the metallic plate and said image pickup device 104 and wiring 103.

b. "the Office Action fails to show that the metallic layer 9c of Murano is transparent to light."

➤ The Examiner agrees with the Applicant in the sense that the metallic layer in Murano is transparent and that it was not indicated in the previous Office

Action mailed on October 6, 2006. However, having a plate of a metallic material being transparent was not claimed.

c. "Thus, the Office Action fails to show why the skilled artisan would have been motivated to modify Matsumoto by replacing the optical glass or other material of the support plate 102 of Matsumoto with the metallic layer associated with element 9c of Murano. See, for example, *In re Dillon*, 13 USPQ2d 1337, 1342 (Fed. Cir. 1989), and M.P.E.P. §2143.01, section "The Proposed Modification Cannot Change The Principle Of Operation Of A Reference."

➤ The Examiner disagrees, as discussed and analyzed in (a), one of ordinary skill in the art would have been motivated to modify Matsumoto without having to reconstruct or redesign the elements in the Matsumoto reference to replace material of the plate 102 to a metal material because the image pickup device 104 and the wiring 103 would be protected by the thin film on the substrate 103 (Matsumoto) against any noise or short circuit between the metallic plate and said image pickup device 104 and wiring 103. Also as discussed in the previous Office Action mailed on October 6, 2006, one of ordinary skill would be motivated to do so in order to reinforce the substrate to prevent fissure or crack from occurrence to the optical system as suggested by Murano (Col. 6, lines 45-50).

d. However, Murano fails to disclose, teach, or suggest the substrate 2 of Murano being between the LED array 3 and the plate; and the metallic layer 9c (Murano at Figure 3).

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➤ The Examiner agrees with the applicant in the sense that the Murano fails to disclose, teach, or suggest the substrate 2 of Murano being between the LED array 3 and the plate; and the metallic layer 9c. However, the Murano reference has been introduced to show that having a substrate reinforced with a metal plate is well known in the art in order to modify the plate 102 in the Matsumoto reference with a metallic plate to reinforce the substrate un Matsumoto. The Murano reference was not introduced to show the substrate being between the image pickup device and the plate; and the metallic layer, since those limitations are present in the Matsumoto reference.

e. Thus, Murano fails to disclose, teach, or suggest an optical element mounted to the wiring board, the optical element including a light-receiving portion, the wiring board being between the optical element and the plate.

➤ The Examiner agrees with the applicant in the sense that Murano fails to disclose, teach, or suggest an optical element mounted to the wiring board, the optical element including a light receiving portion, the wiring board being between the optical element and the plate. However, the Murano reference has been introduced to show that having a substrate reinforced with a metal plate is well known in the art in order to modify the plate 102 in the Matsumoto reference with a metallic plate to reinforce the substrate un Matsumoto. The Murano reference was not introduced to show an optical element mounted to the wiring board, the optical element including a light-receiving portion, the wiring board being

between the optical element and the plate, since those limitations are present in the Matsumoto reference.

**Therefore, the rejection is maintained.**

3. Applicant's arguments with respect to **claims 21-29** have been considered but are moot in view of the new ground(s) of rejection.

4. In the previous Office Action mailed on October 6, 2006, claim 13 was rejected taking Official Notice to the recited limitations. Because the Applicant failed to traverse the Examiner's assertion of Official Notice, the well known in the art statement is taken to be admitted prior art. See MPEP § 2144.03 [R-1] (C).

#### ***Claim Objections***

5. **Claim 25** is objected to because of the following informalities: claim 25 appears to be dependent from claim 21 and recites the limitation "the shielding layer is a metal layer". There is insufficient antecedent basis for this limitation in the claim. Is claim 25 meant to depend from claim 24? For examining purposes, claim 25 will be read as depending from claim 24. Appropriate correction is required.

6. **Claim 26** is objected to because of the following informalities: claim 25 appears to be dependent from claim 21 and recites the limitation "the shielding layer is a resin layer". There is insufficient antecedent basis for this limitation in the claim. Is claim 26 meant to depend from claim 24? For examining purposes, claim 26 will be read as depending from claim 24. Appropriate correction is required.

7. **Claim 27** is objected to because of the following informalities: claim 27 appears to be dependent from claim 21 and recites the limitation "wherein a portion of the resin

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layer is in contact with the wiring board". There is insufficient antecedent basis for this limitation in the claim. Is claim 27 meant to depend from claim 26? For examining purposes, claim 27 will be read as depending from claim 26. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 12, 13, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 in view of Murano, US Patent 5,617,131.**

**Regarding claim 12**, in a second embodiment, Matsumoto et al. discloses an optical system having an optical module (See fig. 7), the optical module comprising: a substrate (See fig. 7, substrate 103), the substrate including a plate (Fig. 7: 102) of a first material (glass, see col. 5, lines 37-44) adhered to a wiring board (Fig. 7: 103) of a material (resin film, see col. 5, lines 37-44) other than the first material; an optical element (Fig. 7: 104) mounted to the wiring board, the optical element including a light receiving portion (Fig. 7: 104a), the wiring board being between the optical element and the plate (See wiring board 103 located between the optical element 104 and the plate 102 as shown in fig. 7); and a lens unit (see optical unit composed of an inner and outer cylinders 12 and 13 as shown in fig. 2; col. 2, lines 59-65; see lens unit also in fig. 7)



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mounted to the plate, the lens unit including a lens (See fig. 1: L), the plate being between the wiring board and the lens unit (See the plate 102 located between the wiring board 103 and the lens unit as shown in fig. 7) (Col. 5, lines 37-65).

In the second embodiment Matsumoto et al. does not explicitly disclose that a through-hole extending through the plate and the wiring board and that the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole.

However, in the first embodiment, Matsumoto et al. discloses an optical system having an optical module (See fig. 2), the optical module comprising: a substrate (See fig. 7, substrate 15), the substrate including a plate (Fig. 2: 15) of a first material (ceramic, see col. 3, lines 1-11) having a wiring pattern (Fig. 4: 17), a through-hole (Fig. 2: 16) extending through the plate and the wiring pattern; an optical element (Fig. 2: 19) mounted to the wiring pattern, the optical element including a light receiving portion (Fig. 2: 19a), the wiring pattern being between the optical element and the plate (the optical element is located on the rear part of the plate 15, where the wiring pattern is located); and a lens unit (see optical unit composed of an inner and outer cylinders 12 and 13 as shown in fig. 2; col. 2, lines 59-65; see lens unit also in fig. 7) mounted to the plate, the lens unit including a lens (See fig. 1: L), the plate being between the wiring pattern and the lens unit (See the plate 15 located between the wiring pattern 103 and the lens unit as shown in fig. 2), wherein that the light receiving portion (Fig. 2: 19a) and the lens are disposed along an optical axis, the optical axis extending through the through-hole (See fig. 2) (Col. 2, line 56 – col. 3, line 58).

Therefore, one of ordinary skill in the art would find obvious to apply the teaching of Matsumoto et al. in the first embodiment to the teaching of the second embodiment to have a through-hole extending through the plate and the wiring board and that the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole. The motivation would have been to improve the optical system by having the ability to position a protective glass or a filter in order to protect the optical element or to capture images under different illumination conditions according to the application.

Matsumoto et al. does not explicitly disclose that the first material is a metal.

However, Murano teaches the use of a plate (Fig. 3: 9c) of a first material (metal) adhered to the wiring board (substrate 2 as shown in fig. 3) of a material (i.e. alumina, silica, calcia and magnesia, see col. 4, line 63 – col. 5, line 9) different from the first material in order to separate the wiring board and the imaging array (Fig. 3: 3) from the other elements of the image device (i.e. lens 9 and other substrates 4; see figs. 3 and 5). Murano also teaches that the imaging array may be an LED, a CCD or EL (See col. 3, lines 16-20; col. 11, lines 39-45) (Col. 3, lines 16-50; col. 4, line 63 – col. 5, line 28; col. 5, line 64 – col. 6, line 50). Having a metal plate adhered to the substrate is advantageous because it would reinforce the substrate in order to prevent fissure or crack from occurrence to the optical system.

Therefore, taking the combined teaching of Matsumoto et al. in view of Murano as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto et al. by having the material of the plate being

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a metal. The motivation to do so would have been to reinforce the substrate in order to prevent fissure or crack from occurrence to the optical system as suggested by Murano (Col. 6, lines 45-50).

**Regarding claim 13**, the combined teaching of Matsumoto et al. in view of Murano as applied to claim 12 teaches that the lens is mounted to a lens barrel (See figs 1, 2 and 7; col. 2, lines 59-65) but does not explicitly disclose the lens barrel being moveable in a direction along the optical axis.

However, Official Notice is taken that the use of lens barrels being moveable along the optical axis of an optical module is notoriously well known to perform different functions (i.e. focusing, depth of field adjustment, etc) in the art and would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto et al. and Murano by having a lens barrel moveable along the optical axis. The motivation to do so would have been to increase the efficiency of the optical system by allowing adjustment of focusing or depth of field of the optical element.

**Regarding claim 19**, claim 19 is analyzed and discussed with respect to claim 12. The combined teaching of Matsumoto et al. in view of Murano teaches the optical system applied to an imaging device (Matsumoto, electronic endoscope, see fig. 1, col. 2, lines 59-65). Grounds for rejecting claim 12 apply here.

**Regarding claim 20**, claim 19 is analyzed and discussed with respect to claim 12. The combined teaching of Matsumoto et al. in view of Murano teaches the optical system applied to a camera system (Matsumoto, electronic endoscope, see fig. 1, col. 2, lines 59-65). Grounds for rejecting claim 12 apply here.

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**10. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 in view of Murano, US Patent 5,617,131 and further in view of Mochizuki, US Patent 5,777,335.**

Regarding claim 15, the combined teaching of Matsumoto et al. in view of Murano fails to teach that the optical element includes a shielding layer, the light-receiving portion being between the shielding layer and the lens.

However, Mochizuki discloses a solid photographing apparatus (See figs. 2 and 9), comprising: a photographic element (Fig. 2: 1) having an upper face with a light receiving portion and an opposing lower face; a circuit board (Fig. 1: 7) having a circuit board upper face and a circuit board lower face; said circuit board upper face defines a recessed portion having an inner surface with a light blocking shield (Fig. 2: 30(5)) disposed thereon (See fig. 2, the wiring 11 forms the recessed portion of the circuit board); and said photographing element being mounted in said recessed portion with said lower face being shielded from light passing through said circuit board lower face by said light blocking shield and said photographing element being electrically connected to said circuit board (using wiring shown in fig. 2: 11) (Col. 3, lines 21-51; col. 4, lines 25-40). Having a shielding layer is advantageous because it would help preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering.

Therefore, taking the combined teaching of Matsumoto et al. in view of Murano and further in view of Mochizuki as a whole, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer, the light receiving portion being between the shielding layer and the lens. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering as suggested by Mochizuki (Col. 2, lines 6-10; col. 3, lines 40-47).

**Regarding claim 16**, the combined teaching of Matsumoto et al. in view of Murano and further in view of Mochizuki as applied to claim 15 teaches that the shielding layer is a metal layer (See Mochizuki, col. 4, lines 25-40; col. 5, lines 19-23).

**11. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 and Murano, US Patent 5,617,131 in view of Mochizuki, US Patent 5,777,335 and further in view of Fujieda, US Patent 6,011,860.**

**Regarding claim 17**, the combined teaching of Matsumoto et al. in view of Murano and further in view of Mochizuki fails to teach that the shielding layer is a resin layer.

However, Fujieda teaches that the use resin for the shielding layer (Fig. 3: 21, note that the hole casing is made with resin for blocking light) is notoriously well known in the art as an alternative for preventing light or radiation to reach the light receiving portion (Fig. 3: 26) (Col. 5, lines 19-40).

Therefore, taking the combined teaching of Matsumoto et al. and Murano in view of Mochizuki and further in view of Fujieda as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer made with resin. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of light to the unwanted locations and the scattering of light outside the apparatus, and also, the generation of noises derived from such scattering using a material different from metal as a matter of design choice.

**Regarding claim 18**, the combined teaching of Matsumoto et al. and Murano in view of Mochizuki and further in view of Fujieda as applied to claim 17 teaches that a portion of the resin layer is in contact with the wiring board (See Mochizuki, figs. 1 and 2, the shielding layer 5 is in contact with the substrate 3).

**12. Claims 21, 22, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 in view of Beaman, US Patent 5,821,532.**

**Regarding claim 21**, in a second embodiment, Matsumoto et al. discloses an optical system having an optical module (See fig. 7), the optical module comprising: a substrate (See fig. 7, substrate 103), the substrate including a plate (Fig. 7: 102) of a first material (glass, see col. 5, lines 37-44) adhered to a wiring board (Fig. 7: 103) of a material (resin film, see col. 5, lines 37-44) other than the first material; an optical element (Fig. 7: 104) mounted to the wiring board, the optical element including a light receiving portion (Fig. 7: 104a), the wiring board being between the optical element and

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the plate (See wiring board 103 located between the optical element 104 and the plate 102 as shown in fig. 7); and a lens unit (see optical unit composed of an inner and outer cylinders 12 and 13 as shown in fig. 2; col. 2, lines 59-65; see lens unit also in fig. 7) mounted to the plate, the lens unit including a lens (See fig. 1: L), the plate being between the wiring board and the lens unit (See the plate 102 located between the wiring board 103 and the lens unit as shown in fig. 7) (Col. 5, lines 37-65).

In the second embodiment Matsumoto et al. does not explicitly disclose that a through-hole extending through the plate and the wiring board and that the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole.

However, in the first embodiment, Matsumoto et al. discloses an optical system having an optical module (See fig. 2), the optical module comprising: a substrate (See fig. 7, substrate 15), the substrate including a plate (Fig. 2: 15) of a first material (ceramic, see col. 3, lines 1-11) having a wiring pattern (Fig. 4: 17), a through-hole (Fig. 2: 16) extending through the plate and the wiring pattern; an optical element (Fig. 2: 19) mounted to the wiring pattern, the optical element including a light receiving portion (Fig. 2: 19a), the wiring pattern being between the optical element and the plate (the optical element is located on the rear part of the plate 15, where the wiring pattern is located); and a lens unit (see optical unit composed of an inner and outer cylinders 12 and 13 as shown in fig. 2; col. 2, lines 59-65; see lens unit also in fig. 7) mounted to the plate, the lens unit including a lens (See fig. 1: L), the plate being between the wiring pattern and the lens unit (See the plate 15 located between the wiring pattern 103 and the lens unit

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as shown in fig. 2), wherein that the light receiving portion (Fig. 2: 19a) and the lens are disposed along an optical axis, the optical axis extending through the through-hole (See fig. 2) (Col. 2, line 56 – col. 3, line 58).

Therefore, one of ordinary skill in the art would find obvious to apply the teaching of Matsumoto et al. in the first embodiment to the teaching of the second embodiment to have a through-hole extending through the plate and the wiring board and that the light receiving portion and the lens are disposed along an optical axis, the optical axis extending through the through-hole. The motivation would have been to improve the optical system by having the ability to position a protective glass or a filter in order to protect the optical element or to capture images under different illumination conditions according to the application.

Matsumoto does not explicitly disclose that the lens unit includes an optical filter and that said lens being between the optical filter and the light-receiving portion.

However, having an optical filter located between an optical filter and a light receiving portion in an optical system having an optical module is well known in the art as taught by Beaman. Beaman teaches an imaging device (See fig. 6) comprising a substrate (Fig. 6: 10) having an image sensor (Fig. 6: 32) mounted to said substrate; a plate (glass 25 in conjunction with lens assembly 40 as shown in fig. 6), a lens unit (see lens system 62 mounted to the plate 25 and lens assembly 40) mounted to said plate; wherein the lens includes an optical filter (blur filter 64 as shown in fig. 6) and a lens (lenses between the filter 64 and the image sensor 32 as shown in fig. 6); wherein the optical axis extends through the optical filter (Col. 2, line 56 – col. 3, line 65).



Therefore, taking the combined teaching of Matsumoto in view of Beaman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto by having the lens unit including an optical filter in the optical axis of the optical system and having the lens being between the optical filter and the light receiving portion. The motivation to do so would have been to reduce the overall height of the optical system since the lens unit would not require a large back focus as suggested by Beaman (Col. 3, lines 40-55).

**Regarding claim 22**, the combined teaching of Matsumoto et al. in view of Beaman as applied to claim 21 teaches that the lens is mounted to a lens barrel (See figs 1, 2 and 7; col. 2, lines 59-65) but does not explicitly disclose the lens barrel being moveable in a direction along the optical axis.

However, Official Notice is taken that the use of lens barrels being moveable along the optical axis of an optical module is notoriously well known to perform different functions (i.e. focusing, depth of field adjustment, etc) in the art and would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto et al. and Beaman by having a lens barrel moveable along the optical axis. The motivation to do so would have been to increase the efficiency of the optical system by allowing adjustment of focusing or depth of field of the optical element.

**Regarding claim 28**, claim 28 is analyzed and discussed with respect to claim 21. The combined teaching of Matsumoto et al. in view of Murano teaches the optical system applied to an imaging device (Matsumoto, electronic endoscope, see fig. 1, col. 2, lines 59-65). Grounds for rejecting claim 21 apply here.

**Regarding claim 29**, claim 29 is analyzed and discussed with respect to claim 21. The combined teaching of Matsumoto et al. in view of Murano teaches the optical system applied to a camera system (Matsumoto, electronic endoscope, see fig. 1, col. 2, lines 59-65). Grounds for rejecting claim 21 apply here.

**13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 in view of Beaman, US Patent 5,821,532 and further in view of Murano, US Patent 5,617,131.**

**Regarding claim 23**, the combined teaching of Matsumoto et al. in view of Beaman fails to teach that the first material is a metal.

However, Murano teaches the use of a plate (Fig. 3: 9c) of a first material (metal) adhered to the wiring board (substrate 2 as shown in fig. 3) of a material (i.e. alumina, silica, calcia and magnesia, see col. 4, line 63 – col. 5, line 9) different from the first material in order to separate the wiring board and the imaging array (Fig. 3: 3) from the other elements of the image device (i.e. lens 9 and other substrates 4; see figs. 3 and 5). Murano also teaches that the imaging array may be an LED, a CCD or EL (See col. 3, lines 16-20; col. 11, lines 39-45) (Col. 3, lines 16-50; col. 4, line 63 – col. 5, line 28; col. 5, line 64 – col. 6, line 50). Having a metal plate adhered to the substrate is advantageous because it would reinforce the substrate in order to prevent fissure or crack from occurrence to the optical system.

Therefore, taking the combined teaching of Matsumoto et al. in view of Beaman and further in view of Murano as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsumoto et al. and

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Beaman by having the material of the plate being a metal. The motivation to do so would have been to reinforce the substrate in order to prevent fissure or crack from occurrence to the optical system as suggested by Murano (Col. 6, lines 45-50).

**14. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 in view of Beaman, US Patent 5,821,532 and further in view of Mochizuki, US Patent 5,777,335.**

**Regarding claim 24**, the combined teaching of Matsumoto et al. in view of Beaman fails to teach that the optical element includes a shielding layer, the light-receiving portion being between the shielding layer and the lens.

However, Mochizuki discloses a solid photographing apparatus (See figs. 2 and 9), comprising: a photographic element (Fig. 2: 1) having an upper face with a light receiving portion and an opposing lower face; a circuit board (Fig. 1: 7) having a circuit board upper face and a circuit board lower face; said circuit board upper face defines a recessed portion having an inner surface with a light blocking shield (Fig. 2: 30(5)) disposed thereon (See fig. 2, the wiring 11 forms the recessed portion of the circuit board); and said photographing element being mounted in said recessed portion with said lower face being shielded from light passing through said circuit board lower face by said light blocking shield and said photographing element being electrically connected to said circuit board (using wiring shown in fig. 2: 11) (Col. 3, lines 21-51; col. 4, lines 25-40). Having a shielding layer is advantageous because it would help preventing external scattering of radiation to the unwanted locations and the scattering

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of radiation outside the apparatus, and also, the generation of noises derived from such scattering.

Therefore, taking the combined teaching of Matsumoto et al. in view of Beaman and further in view of Mochizuki as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer, the light receiving portion being between the shielding layer and the lens. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of radiation to the unwanted locations and the scattering of radiation outside the apparatus, and also, the generation of noises derived from such scattering as suggested by Mochizuki (Col. 2, lines 6-10; col. 3, lines 40-47).

**Regarding claim 25**, the combined teaching of Matsumoto et al. in view of Beaman and further in view of Mochizuki as applied to claim 24 teaches that the shielding layer is a metal layer (See Mochizuki, col. 4, lines 25-40; col. 5, lines 19-23).

**15. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent 5,040,069 and Beaman, US Patent 5,821,532 in view of Mochizuki, US Patent 5,777,335 and further in view of Fujieda, US Patent 6,011,860.**

**Regarding claim 26**, the combined teaching of Matsumoto et al. in view of Beaman and further in view of Mochizuki fails to teach that the shielding layer is a resin layer.

However, Fujieda teaches that the use resin for the shielding layer (Fig. 3: 21, note that the hole casing is made with resin for blocking light) is notoriously well known in the art as an alternative for preventing light or radiation to reach the light receiving portion (Fig. 3: 26) (Col. 5, lines 19-40).

Therefore, taking the combined teaching of Matsumoto et al. and Beaman in view of Mochizuki and further in view of Fujieda as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical system by having a shielding layer made with resin. The motivation to do so would have been to improve the optical system efficiency by preventing external scattering of light to the unwanted locations and the scattering of light outside the apparatus, and also, the generation of noises derived from such scattering using a material different from metal as a matter of design choice.

**Regarding claim 27**, the combined teaching of Matsumoto et al. and Beaman in view of Mochizuki and further in view of Fujieda as applied to claim 26 teaches that a portion of the resin layer is in contact with the wiring board (See Mochizuki, figs. 1 and 2, the shielding layer 5 is in contact with the substrate 3).

### ***Conclusion***


16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



VIVEK SRIVASTAVA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

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Nelson D. Hernandez  
Examiner  
Art Unit 2622

NDHH  
March 18, 2007